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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,594

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Jurgen Schredl

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EXAMINER

KERNS, KEVIN P

ART UNIT

PAPER NUMBER

1793

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/020,594	<b>Applicant(s)</b> SCHREDL ET AL.	
	<b>Examiner</b> Kevin P. Kerns	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/485,426.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers et al (US 5,400,950) in view of Gotman (US 4,404,453).

Myers et al. disclose a process of connecting two substrates comprising the steps of applying solder material to terminal areas of a first substrate to form electrically conductive spacing metallizations with solder material in direct contact with terminal areas (col. 1, lines 50-65; and col. 6, lines 34-40). Myers et al. lack the mentioning of partial fusion of the spacing metallizations.

However, Gotman discloses using laser energy to partially melt the solder (col. 3, lines 19-22) for the purpose of avoiding or minimizing any damage to the parts being attached together (col. 2, lines 35-40). In addition, Gotman discloses heating the solder (72) to become partially liquefied and then fusion takes place, which is during the bonding action (col. 4, lines 18-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to provide a laser heating means to partially melt the solder, as taught by Gotman, in the process disclosed by Myers et al., in order to prevent any damage to the parts.

4. Claims 5-9, 12-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers et al (US 5,400,950) in view of Gotman (US 4,404,453), and further in view of Leicht et al. (U.S. 5,551,627).

Myers et al. (in view of Gotman) disclose and/or suggest the claimed invention above, but lack mention of conductive adhesives.

However, Leicht et al. disclose the process for producing a contact structure for connecting two substrates, comprising the steps of applying solder material to terminals to form spacing metallizations, wherein a conductive adhesive compound is applied to solder (col. 4, lines 40-51) for the purpose of being more capable of resisting fatigue.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to apply adhesives, as taught by Leicht et al., in

the process disclosed/suggested by Myers et al. in view of Gotman, in order to resist fatigue.

5. Claims 10, 11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers et al (US 5,400,950) in view of Gotman (US 4,404,453), and further in view of Beddingfield et al. (US 5,710,071).

Myers et al. (in view of Gotman) disclose and/or suggest the claimed invention above, but fail to teach filling the gap between the substrates with a filler material.

However, Beddingfield et al. disclose applying a filler (encapsulant) material in the gap of the substrates for the purpose of expelling any trapped air and to prevent the chip from warping (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have filler material in between the substrates, as taught by Beddingfield et al., in the process disclosed/suggested by Myers et al. in view of Gotman, in order to expel air and prevent warping.

### ***Response to Arguments***

6. The examiner acknowledges the applicants' amendment received by the USPTO on June 9, 2008. The amendments overcome prior claim objections and 35 USC 112, 2<sup>nd</sup> paragraph rejections. The present Office Action has been corrected and made non-final due to omission of the Gotman reference from sections 7 and 8 of the Office Action mailed December 14, 2007. Claims 1-20 remain under consideration in the application.

7. Applicants' arguments with respect to claims 5-20 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicants' arguments filed June 9, 2008 (regarding claims 1-4) have been fully considered but they are not persuasive.

With regard to the applicants' remarks/arguments on pages 8-13, it is first noted that the applicants' amendments to independent claims 12 and 17 (and claims dependent therefrom) raise new grounds of rejection, for which the Leicht et al. reference has been applied for reasons of disclosing the conductive adhesive compound (see above section 4 of the 35 USC 103(a) rejections for these new grounds of rejection). Moreover, the applicants do not specifically address any deficiencies of the Leicht et al. reference in the paragraph bridging pages 12 and 13 of the remarks section. In addition, the potential deficiencies of Beddingfield et al. have not been addressed on page 13 of the remarks section. As the applicants' arguments apply to claims 1-4 (which include the same grounds of rejection under 35 USC 103(a)), the examiner respectfully disagrees with these arguments provided throughout pages 9-12. In the 1<sup>st</sup> full paragraph on page 10 of the remarks section, the applicants state that *"Myers et al. fails to teach or suggest the combination of an electrically conductive spacing between the terminal areas of the first substrate and a contact surface area of a second substrate"* and that *"Myers et al. merely suggest that the dummy bumps 20 provide for only a spacing function. Myers et al. clearly discloses that the dummy*

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*bumps 20 are electrically inactive" (Column 5, lines 35-36)".* The examiner respectfully disagrees with these arguments that are not specifically addressing the claimed features of independent claim 1, which sets forth "electrically conductive spacing metallizations". The "dummy bumps 20" of Myers et al. that are under dispute are in fact "dummy solder bumps 20", with such solder (metal) bumps clearly being electrically conductive metallizations. The issue regarding that the dummy solder bumps 20 are "electrically inactive" merely means that the bumps are not in contact with other conductive elements in the device of Myers et al., but are instead used for control of spacing. As mentioned in the prior Office Action (and when taken in view of the applicants' remarks addressing the Gotman reference throughout pages 11 and 12 of the remarks section), the applicants are generally attacking the references individually, rather than what one of ordinary skill in the art would have recognized in the combined teachings. For example, in the sentence bridging pages 11 and 12 of the remarks section, the statement "*partial fusion of the spacing metallizations is performed during the bonding action and not before the bonding action as in the case with the process disclosed in Gotman*" is not particularly pertinent in view of the established teachings of Myers et al. In response to the applicants' arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). As a result, claims 1-20 remain rejected.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571)272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner  
Art Unit 1793

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August 6, 2008